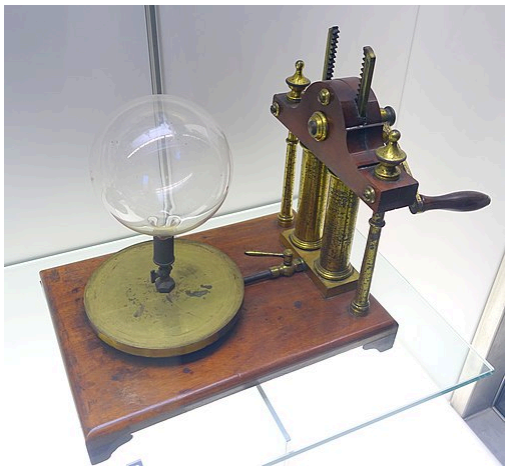
Vacuum

space that is empty of matter

A **vacuum** is a place where there is no matter, not even air. Sound cannot move in a vacuum. No place has a perfect vacuum, because a small number of particles remain, even in outer space.



Vacuum pump

A space where only some of the air is removed is also called a vacuum. The space then has lower pressure, even though most of the air remains.

Common uses

- A vacuum cleaner works by pumping away some of the air. The air and dirt in a room rush into the vacuum left behind, where the dirt is caught by a filter.
- An automobile engine that burns fuel uses a vacuum to pull in air, which contains oxygen that allows the fuel to burn.
- An incandescent lightbulb has a vacuum inside so the hot filament doesn't burn up.

Industrial uses

Vacuum is needed for some kinds of machines used for industrial production. Vacuum pumps are used to pump air out of a vacuum chamber. It is not possible to create 100% vacuum, but some vacuum pumps are able to create 99.9999% vacuum. This is called "hard vacuum". Most industrial purposes do not need hard vacuum.

Industrial vacuums are mainly used in:

- Food industry
- Electronics industry
- Packaging

- Manipulation
- Coating and degasing

Scientific experiments

Vacuum chambers are also used in many scientific experiments in laboratories. Some experiments in physics and chemistry need hard vacuum to keep any air or other gases from interfering with delicate surfaces or chemicals that can react.

Related pages

- Nothing
- Vacuum cleaner

References

- Industrial vacuum information (http://www.vakuum-bohemia.cz/vacuum_pumps.php)